

put into the autoclave via the catalyst feeder tube. Ethylene was continuously introduced into the autoclave so as to have all the time the constant pressure of 3.0 kg/cm<sup>2</sup>G (0.294 MpaG), and copolymerized for 1 hour. Next, methanol was added to this to stop the copolymerization. A large amount of methanol was added to this, and the polymer formed was separated through filtration, and then dried at 60°C under reduced pressure for 4 hours. Thus obtained, the ethylene-styrene copolymer weighed 16.2 g. As measured through <sup>1</sup>H-NMR, the styrene content of the copolymer was 99 mol%. As measured through <sup>13</sup>C-NMR, the structure of randomcopolymer was identified.

[Comparative Example 2]

175 ml of toluene, 200 ml of styrene, 1.0 ml of a toluene solution of 1.0 M triisobutylaluminium were put into a 1.6-liter autoclave equipped with a catalyst feeder tube, in that order, and heated up to 50°C. Next, ethylene was introduced into the autoclave to have a pressure of 0.294 MPaG (3 kg/cm<sup>2</sup>G). Next, a solution where 10.0 μmol of octahydrofluorenyl-titanium trimethoxide and 10 mmol of methylaluminoxane dissolved in 25 ml of toluene was put into the autoclave via the catalyst feeder tube. Ethylene was continuously introduced into the autoclave so as to have all the time the constant pressure of 3.0 kg/cm<sup>2</sup>G (0.294 MpaG), and copolymerized for 1 hour. Next, methanol was added to this to stop the copolymerization. A large amount of methanol was

added to this, and the polymer formed was separated through filtration, and then dried at 60°C under reduced pressure for 4 hours. Thus obtained, the ethylene-styrene copolymer weighed 6.7 g. As measured through <sup>1</sup>H-NMR, the styrene content of the copolymer was 99 mol%.

[Example 3]

165 ml of toluene, 200 ml of styrene, 1.0 ml of a toluene solution of 1.0 M triisobutylaluminium, and 5.0 ml of a ethylbenzene solution of 0.1 M diisobutyl-aluminium triphenyl methoxide were put into a 1.6-liter autoclave equipped with a catalyst feeder tube, in that order, and heated up to 50°C. Next, ethylene was introduced into the autoclave to have a pressure of 0.294 MPaG (3 kg/cm<sup>2</sup>G). Next, a solution where 10.0 μmol of N,N-dimethylamino-ethyltetramethyl cyclopentadienyl-titanium dichloride and 10 mmol of methylaluminoxane dissolved in 25 ml of toluene was put into the autoclave via the catalyst feeder tube. Ethylene was continuously introduced into the autoclave so as to have all the time the constant pressure of 3.0 kg/cm<sup>2</sup>G (0.294 MpaG), and copolymerized for 1 hour. Next, methanol was added to this to stop the copolymerization. A large amount of methanol was added to this, and the polymer formed was separated through filtration, and then dried at 60°C under reduced pressure for 4 hours. Thus obtained, the ethylene-styrene copolymer weighed 4.6 g.

[Comparative Example 3]

175 ml of toluene, 200 ml of styrene, 1.0 ml of a toluene solution of 1.0 M triisobutylaluminium were put into a 1.6-liter autoclave equipped with a catalyst feeder tube, in that order, and heated up to 50°C. Next, ethylene was introduced into the autoclave to have a pressure of 0.294 MPaG (3 kg/cm<sup>2</sup>G). Next, a solution where 10.0 μmol of N,N-dimethylamino-ethyltetramethylcyclopentadienyl-titanium dichloride and 10 mmol of methylaluminoxane dissolved in 25 ml of toluene was put into the autoclave via the catalyst feeder tube. Ethylene was continuously introduced into the autoclave so as to have all the time the constant pressure of 3.0 kg/cm<sup>2</sup>G (0.294 MPaG), and copolymerized for 1 hour. Next, methanol was added to this to stop the copolymerization. A large amount of methanol was added to this, and the polymer formed was separated through filtration, and then dried at 60°C under reduced pressure for 4 hours. Thus obtained, the ethylene-styrene copolymer weighed 1.7 g.

INDUSTRIAL APPLICABILITY

Using catalysts of the invention, olefin-styrene copolymers can be produced efficiently and inexpensively.